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AUTHOR Chute, Alan G.; And Others
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ABSTRACT

This report describes the AT&T (American Telephone and Telegraph Company) teletraining program, which includes internal programs, one-hour update programs, and special internal seminars. Topics considered include the number of courses, sessions, and update programs offered; the number of students served; and student acceptance of the programs and the instructors. Discussion of the cost benefits achieved by AT&T through this program focus on direct travel cost avoidance, increased productivity, and the ability to offer programs that otherwise would not have been undertaken. Data on the programs are displayed in nine figures. (EW)

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TELETRAINING PRODUCTIVITY AT AT&T

Alan G. Chute, Ph.D.
Mary K. Hulick
Craig A. Palmer

AT&T
CINCINNATI, OHIO

Paper presented at

International Teleconferencing Association
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Alan G. Chute, Ph.D.

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INTRODUCTION

Previous reports on teletraining at AT&T have demonstrated that teletraining is a viable educational delivery medium for multiday courses and for information update programs. Since 1981, AT&T has actively studied teletraining applications, cost benefits and learning effectiveness. This article reports the 1986 teletraining results at three Cincinnati based AT&T training organizations: Sales and Marketing Education Division, AT&T Client Education Division, and the Network Training Organization.

BACKGROUND

AT&T Teletraining was established to meet the continuing educational needs of AT&T's employees located throughout the United States. Teletraining was proven to be a cost-effective alternative to the high costs associated with face-to-face instruction. In addition, teletraining was discovered to be a better way to keep knowledged workers up-to-date on the latest service information and technological developments. Currently AT&T operates three teletraining networks.

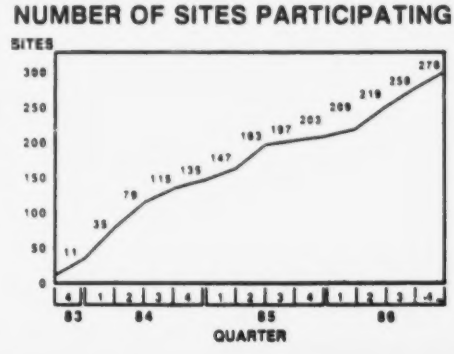
National Teletraining Network

In 1981, AT&T began to offer professional sales courses to field locations via teletraining. These courses ranged from two days to two weeks in length. In October of 1983, the Sales and Marketing Education Division established the National Teletraining Network (NTN) which offered weekly one hour information updates to the field sales personnel throughout the United States. The update programs developed for teletraining delivery were topics which field sales managers had identified as high interest topics required to keep current in a competitive telecommunications environment. In 1985 special seminar programs were added to the regularly scheduled courses and update programs. The seminars averaged one hour in length and typically were targeted to the needs of special interest groups, such as branch managers.

The NTN has grown in size from its inception to become a large, multifaceted network of over 250 locations today (Figures 1 and 2). Network expansion and technological advances have been driven both by the requests from field managers to include their cities on the network, and by management initiatives to migrate the delivery technology to include the latest state-of-the-art devices.

FIGURE 1

FIGURE 2



The NTN today delivers weekly one-hour update programs via audio teleconferencing, fifteen regularly scheduled teletrained courses via audio graphic teleconferencing (i.e. PC Teletraining), and one to two-hour special seminars via audio and video teleconferencing. The number of sessions offered has increased and the number of participants who have attended NTN sessions has grown steadily since the inception of the project to over 46,000 at the end of 1986 (see Figures 3, 4, 5, and 6).

FIGURE 3

NATIONAL TELETRAINING NETWORK

UPDATE PROGRAMS

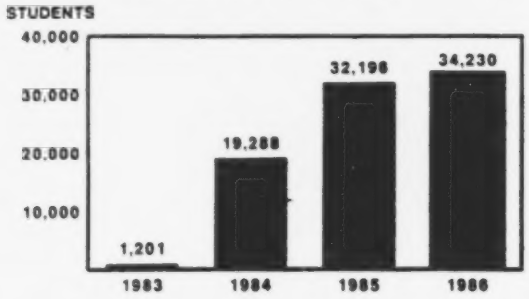


FIGURE 4

NATIONAL TELETRAINING NETWORK

COURSES

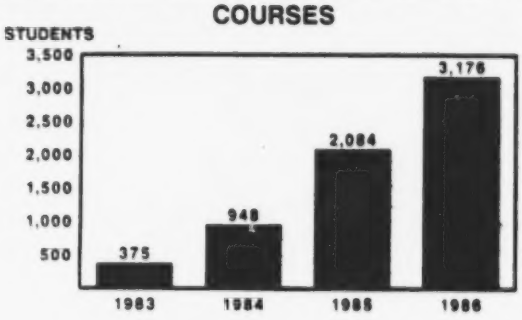


FIGURE 5

NATIONAL TELETRAINING NETWORK

SEMINARS

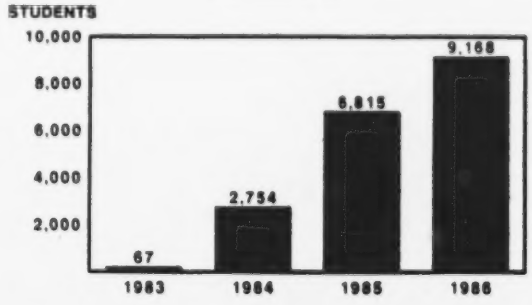
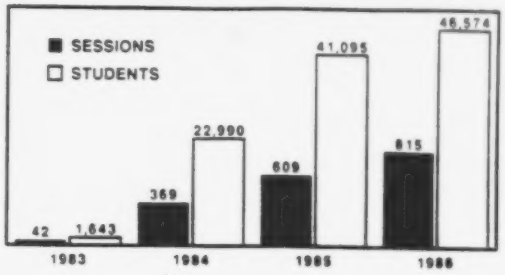


FIGURE 6

NATIONAL TELETRAINING NETWORK

SESSIONS / STUDENT TOTALS



Client Teletraining Network

The Client Education Division of AT&T is currently in the process of expanding its teletraining efforts by implementing a Client Teletraining Network (CTN). The CTN will serve AT&T clients by providing training programs via teletraining to regionally deployed Communication Planning Centers, Executive Communications Centers, AT&T Sales Offices, International AT&T Offices, and eventually directly to client premises. The ongoing management and operation of the CTN will be the responsibility of the Client Education group in Cincinnati, Ohio.

Since 1985 the CTN has utilized PC-based teletraining (i.e. interactive multi-point computer graphic software applications for the AT&T 6300 PC) to deliver client training programs. In 1988 the CTN will incorporate AT&T Video Broadcast System (VBS) and advanced PC-based networking applications to reach over 100 locations. Programs will include half-day informational updates, one to three-day programs on telecommunication management issues, and continuing education programs as an extension of the existing AT&T Client Information Technology Curriculum. The programs will be a combination of fee-based and non-fee based, and will be delivered by faculty from the Client Education district in Cincinnati, as well as guest presenters from AT&T Headquarters in New Jersey.

PC Teletraining Network

The AT&T Network Training Organization (NTO) provides training to AT&T personnel who are responsible for engineering and operating AT&T's public switched network (i.e. the long

distance network) as well as maintaining AT&T's central office services (i.e. operator assistance services across the country). During fourth quarter of 1986, the NTO PC Teletraining Network was established with the deployment of 50 PC Conferencing systems to provide more timely and cost-effective training programs. Much of the training provided by NTO is quite technical in content with complex schematics, diagrams and drawings. The interactive graphics capability was chosen as the delivery medium which best met their training requirements. This network is utilized to deliver a variety of technical programs to AT&T Network employees around the country. Plans are currently underway to deliver some quality awareness and professional standards training to all Network personnel using this PC Teletraining Network. Additionally, development has begun on eight new courses for delivery over this network during second and third quarter 1987.

PC Teletraining continues to be an efficient and cost-effective vehicle for the Network Training Organization to meet their training requirements. Evidence of its success and student acceptability can be seen through the aggressive plans currently underway to expand by a minimum of 53 additional teletraining locations throughout 1987.

TELETRAINING RESEARCH

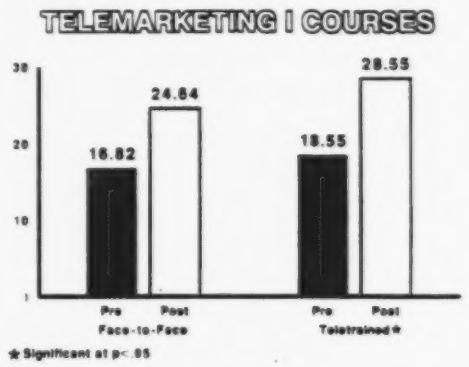
In 1985 AT&T established the National Teletraining Center (NTTC) to research teletraining and to act as the AT&T showcase for innovative teletraining technologies and applications. The mission of the NTTC was to conduct research, teach AT&T personnel and AT&T Clients to use teletraining effectively and to provide services such as consultation on teletraining/teleconferencing system design and implementation. The NTTC currently provides customized executive briefings, monthly training programs and consultation for AT&T Clients who are implementing nationwide and international teletraining and teleconferencing systems.

The NTTC has closely monitored the impact of teletraining on student learning, on student acceptance of courses and instructors, and on student willingness to the additional teletrained programs. The following section of the article reviews the research conducted by the NTTC staff.

Student Learning from Courses

Previous research has shown that teletraining was as effective and in some cases more effective than face-to-face instruction. In general, there were no significant differences between the amount of information students learned in classes that were teletrained and the amount they learned in face-to-face classes. As part of an ongoing research process, comparative studies of student learning are periodically conducted. One learning effectiveness study compared the test scores for students attending teletrained and face-to-face classes of the Telemarketing I course. The difference between the two groups was not significant at the .05 level ($t = 1.73$, $df = 20$) (see figure 7). On the post test, the teletrained group's performance was significantly higher than the face-to-face group ($t = 6.24$, $df = 20$).

FIGURE 7



Student Acceptance of Courses and Instructors

Students attending courses offered by AT&T complete a student reaction survey at the end of each class. The survey has two categories: course relevance and design, and quality of instruction. The last item in each category is used as a general index of student satisfaction. The items are: "Overall, I feel the course was effective," and "Overall, I feel the instructor was effective." These two items were used to compare student acceptance of the face-to-face and teletrained courses.

During 1984 and 1985, courses in the sales training curriculum were redesigned for teletrained delivery. As the transition was being made to a teletrained delivery mode, the courses continued to be taught face-to-face. Modifications were made in the design of the courses to adapt to the medium of teletraining; however, the course objectives and the instructors were the same for both the face-to-face and teletrained versions of the courses. During one study period, a total of 329 students attended 45 face-to-face classes, and 590 students attended 32 teletrained classes.

Significance tests for large-sample means were used to compare the study data for all face-to-face classes with the teletrained scores for the second half of 1984. The teletrained classes from July through December were used because the courses were progressively being converted to teletrained delivery during the first half of the year. The results of these analyses are shown in Figures 8 and 9. No significant differences at the .05 level of significance were found between the face-to-face and the teletrained classes on either the course relevance and design or the quality of instruction categories. This research supports the conclusion that students do not perceive a difference in effectiveness between courses delivered in a teletrained delivery mode and those delivered in more traditional face-to-face classes.

FIGURE 8

STUDENT ACCEPTANCE OF COURSES

	Teletrained	Face-to-Face
Sessions	32	45
Mean	4.03	4.18
Standard Deviation	.42	.42

No significant difference ($z=1.52$, $df=75$, $p=.06$)

FIGURE 9

STUDENT ACCEPTANCE OF INSTRUCTORS

	Teletrained	Face-to-Face
Sessions	32	45
Mean	4.54	4.57
Standard Deviation	.27	.31

No significant difference ($z=.45$, $df=75$, $p=.33$)

Student Acceptance of Update Programs

A short questionnaire was used to evaluate the effectiveness of the one-hour update programs offered to the sales force via teletraining. The most important question on the questionnaire was: "Would you participate in future teletraining programs?" Students overwhelmingly agreed. This item was measured on a two-point scale (yes,no) and was used as an indicator of student acceptance of these programs. The results on this item for 1984 and 1985 were: 99% yes, and 1% no.

Student acceptance of the one-hour update programs began high and has remained high over the two-year study. Today, these update programs are an integral part of the continuing education process for professional staff within AT&T. The teletraining update programs are a primary vehicle for introducing new applications and for keeping the field personnel up-to-date on important issues, products and services.

Student Acceptance of Seminar Programs

The special seminar programs were designed to meet unique needs of special interest groups. Sometimes these seminars were broadcast to a nationwide audience. Other times they were scheduled in a limited number of sites and special registration procedures were followed. The participants had a unique opportunity to interact with internationally known experts. Some representative seminars include: Tom Peters on Management Excellence, Terrance Deal on Corporate Culture, and Warner Burke on Management Style. Student acceptance of these programs has been overwhelmingly positive.

The research done at AT&T has focused on demonstrating that teletraining is an effective training medium as measured by student learning and acceptance. The results of the studies presented here strongly support the conclusion that teletraining is a viable instructional delivery mode.

COST BENEFITS OF TELETRAINING

Teletraining produced significant cost benefits for AT&T in 1986. Major savings were realized for the courses, the one-hour updates and the special seminar programs delivered via teletraining. The savings resulted from travel costs and productivity-related costs that were avoided by using the teletraining medium. The information presented here substantiates the fact that teletraining is a cost effective alternative to face-to-face delivery of training.

Savings from Teletrained Courses

In computing the cost benefits for the 1986 courses delivered via teletraining, the assumption was made that students would have had to travel to Cincinnati to receive this training if teletraining were not an alternative. During 1986, 3,176 students attended teletrained sessions of courses in the sales training curriculum. The course length ranged from one half day to three days. The average course length in 1985 was 7.83 hours. An average round trip airfare of $400 and a per

diem cost of $100 for lodging and daily expenses resulted in a total cost avoidance per student of $500 per average course. The total savings for 3,176 students was $1,588,000.

The cost avoidance from not traveling is offset somewhat by the line and bridging charges associated with teletraining. A typical teletrained course at Sales and Marketing Education had one host site and two remote sites. This configuration incurred charges for three lines and three ports on the bridge. Bridging costs were based on AT&T ALLIANCE* Teleconferencing Services. Equipment and other capital investments were not considered in these calculations since existing equipment was used; only operating expenses were included. Using these assumptions, the total network charges for the 750 teletrained connections were $234,900. Subtracting these network teletraining charges from the cost avoidance figure produced a net savings of $1,353,100, or $426 per student.

Travel cost avoidance was only part of the actual savings realized from teletraining. Substantial employee productivity savings also occurred; that is, the reemployment of nonproductive time spent traveling, waiting in airports, and catching up once back at the home location. Assuming the average nonproductive time was six hours per student, the total time expense for students was $457,300, or $144 per student. Adding this savings to the earlier travel cost figure produced a total cost avoidance of $1,810,400 or $570 per student.

This data supports the assertion that teletraining is clearly a cost-effective way to deliver courses. The benefits included both direct travel expense avoidance and increased productivity resulting from reduced nonproductive time.

Savings from Update Programs

Similar calculations were performed to determine the cost avoidance for the update and seminar programs via the NTN. The following two assumptions were made in doing these calculations. First, students from the 276 field locations would not travel to Cincinnati to participate in a 60-minute training session; therefore, each presenter would have to travel to 67 major sites to deliver the training. Second, students would utilize ground transportation from local or remote locations to attend a training session in one of the 67 locations.

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If each presenter had traveled to 67 locations, costs incurred would have been $100 for local expenses and $400 for airfare; the travel cost for each presenter would have been $33,500. For the 68 update programs presented in 1986, the cost avoided was $2,278,000.

The cost-benefit analysis for the update programs also accounts for the costs associated with the operation of the network. The cost of the long distance calls placed to Cincinnati by each of the remote locations was $469,200. A dedicated ALLIANCE* bridge located in Cincinnati was used for the programs. The 1986 costs incurred for local access using the dedicated bridge was $90,000. The expenses incurred for the reproduction and mailing of visuals used for the programs during 1986 was $55,000. The total cost avoidance for the 1986 NTN update programs was $1,663,800, a net savings of $24,500 per program.

Savings from Seminars

It is difficult to attribute a cost avoidance estimate to the special management teleseminars offered by the NTN in 1986. Without teletraining these seminars would not have been offered. It is unreasonable to assume that a nationally known seminar speaker such as Tom Peters would have traveled to 67 AT&T locations; also, AT&T employees would not have traveled to a central location for a two-hour seminar. The value of these seminars is clearly recognized, but a cost avoidance estimate is not appropriate for the circumstances.

BENEFITS

The cost benefit calculations indicate that teletraining is a cost effective method for providing training for AT&T. Benefits, in addition to cost effectiveness, include the ability of this medium to reach remote, low density locations which are too difficult and time consuming to reach through conventional travel arrangements; the ability to add multiple locations to a training session when needed; the flexibility to increase the number of students who can be reached at one time; the ability to quickly disseminate information to an entire work force; and the ability to share limited instructor resources. Without teletraining, much of the current training would not be attempted due to various constraints. Perhaps the chief benefit of Teletraining is that it provides training to AT&T field employees where they need it and when they need it to remain current in a competitive environment.

CONCLUSION

The AT&T Teletraining Networks have had a positive impact on the field employees within AT&T in three major areas. First, knowledge workers have had an opportunity to keep current and to increase their knowledge base of products, procedures, and services in a timely manner. Studies conducted within AT&T have shown that teletraining is a viable means of learning technical information and sales skills. Second, student acceptance of the teletrained courses, update programs and the special seminars has been outstanding. Students indicate that teletraining is a viable medium for delivering content which addresses sales skills and technical information. Third, the educational programs delivered via teletraining have been proven as very cost effective alternatives to traditional delivery channels for professional sales and technical education.

AUTHORS

Alan G. Chute is Manager of the AT&T National Teletraining Center in Cincinnati, Ohio. He is also the Curriculum Delivery Manager for the teletraining and teleconferencing courses offered to AT&T clients. He has an M.S. and Ph.D. in Instructional Technology from the University of Wisconsin-Madison. Alan was the project manager for the design and implementation of the AT&T National Teletraining Network, and project manager for the design of the AT&T Client Teletraining Network. He was the director of a statewide teleconferencing and teletraining network in South Dakota, and a Signal Corps Officer in the U.S. Army.

Mary K. Hulick is Manager of the Client Teletraining Network for AT&T. Her responsibilities include the management, scheduling and delivery of client presentations for teleconferencing and teletraining as well as various technical and applications oriented workshops and courses. Just prior to assuming this position, Mary was a certified instructor and course manager at AT&T Sales and Marketing Education Division in Cincinnati, Ohio where she had responsibility for the management and delivery of a teletrained course to internal sales and marketing personnel.

Craig A. Palmer is Staff Supervisor for the National Teletraining Network in Cincinnati, Ohio. His responsibilities include promoting the network, establishing new network sites, programming and scheduling, coaching program presenters, and supervising network operations. Craig is also involved with client demonstrations and training on the ALLIANCE* Dedicated Teleconferencing Service. Prior to this position, Craig managed the implementation of a PC Teletraining network used in teletraining courses for the AT&T internal sales force.

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